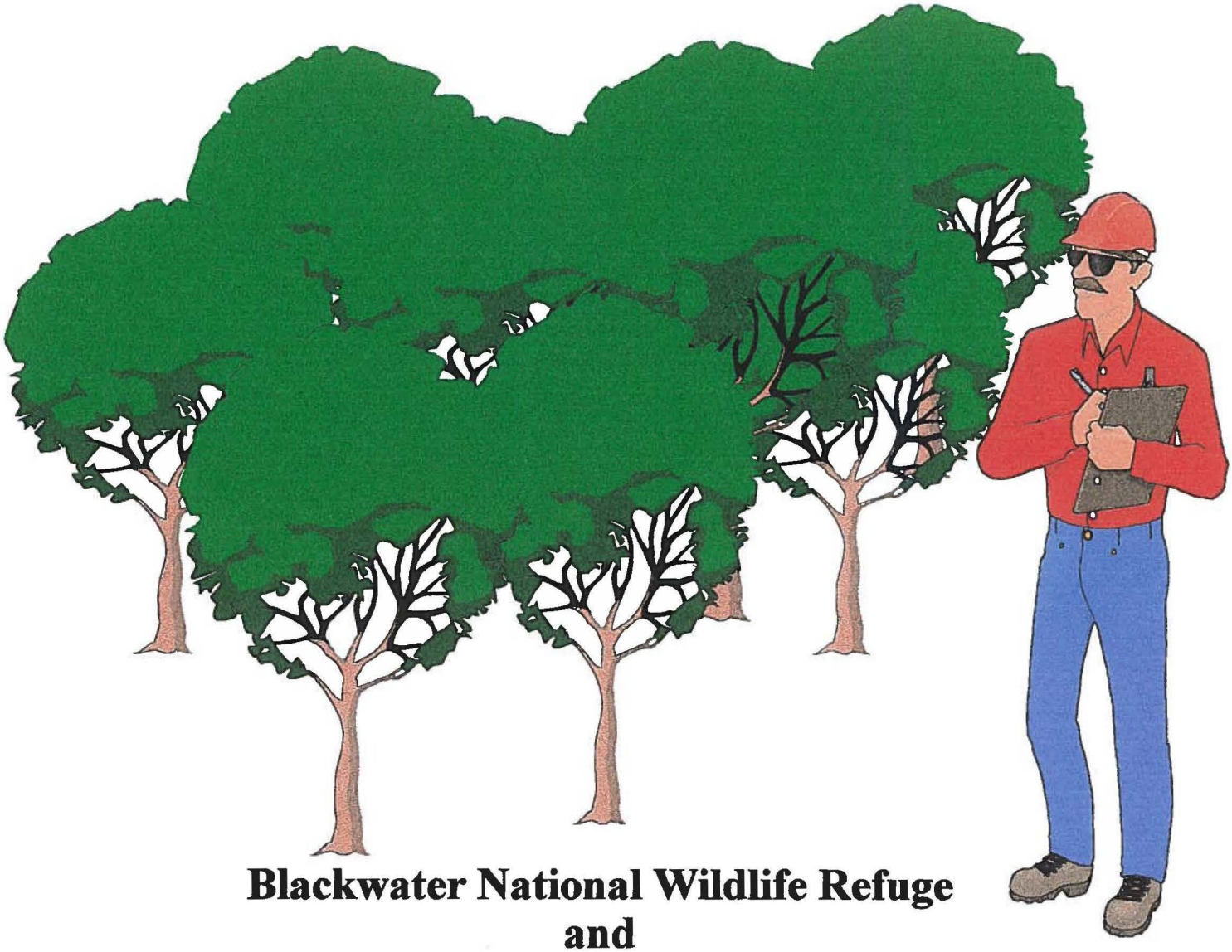
1996 Gypsy Moth Suppression Project Work Plan



Blackwater National Wildlife Refuge
and
Piscataway Park

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INTRODUCTION

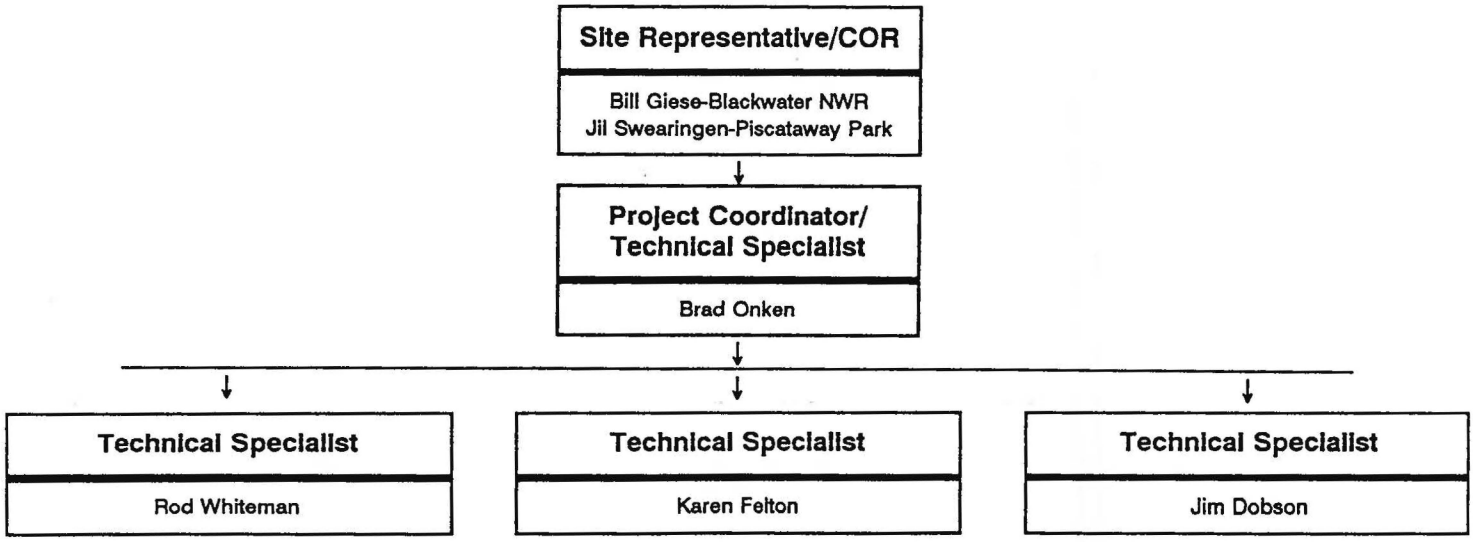
In 1996, the microbial insecticides *Bacillus thuringiensis* var. *kurstaki* (*Btk*) and the gypsy moth nucleopolyhedrosis virus product known better as Gypchek will be used on the projects. At Blackwater NWR, 896 acres will be treated with two applications of *Btk* while 100 acres at Piscataway Park will be treated with two applications of Gypchek.

The primary treatment objective at each site is to prevent noticeable defoliation (>30 percent) from occurring on more than 20 percent of the treatment area. A second objective is to reduce residual gypsy moth populations below the treatment threshold of 750 egg masses per acre on at least 80 percent of the treatment area.

ORGANIZATION AND RESPONSIBILITIES

The organization for the suppression projects at Piscataway Park and Blackwater NWR is shown in an organizational flow chart below. Each person is to report to the person directly above them with any problems or concerns.

Organizational Chart for the 1996 Gypsy Moth Suppression Projects
at Blackwater NWR and Piscataway Park



Site Representative/COR - Although the Site Representative and Contracting Officer Representative (COR) can be separate responsibilities assigned to two individuals, most often they are assigned to one person from the responsible agency of the treatment area.

The COR has the responsibility for the overall spray program. Although contract disputes may be deferred to the Contracting Officer, the COR has the authority to stop all spray activities until issues are resolved. As Site Representative, all matters dealing with the public, adjacent landowners or the press will be dealt with according to Standard Operating Procedures of the agency involved. Technical matters related to the spray project however, may be deferred to on-site Forest Service Technical Specialists if necessary.

The Site Representative or a designee must be present or immediately available during spray operations. If not on-site, the Forest Service Technical Specialist have the authority to stop all spray operations should any safety or contract concern warrant such action.

All notification of spray operations to personnel working or visiting the areas to be treated and any mitigating measures necessary to protect environmental sensitive areas is the responsibility of the Site Representative.

Spray Operations Technical Specialist(s) - The Technical Specialist(s) from the Forest Service will have the responsibility to help organize, implement and evaluate the suppression program. Upon the award of the contract by the Contracting Officer, the Technical Specialists will work directly with the contractor and COR to carry out the logistics of spray operations. These logistics include: 1) aircraft and equipment inspection, calibration and characterization; 2) staging area site preparation; 3) treatment area familiarization; 4) communication system(s) between the staging area and project areas; 5) treatment timing based on larvae/foliage development and desireable weather conditions; 6) oversee operational safety practices; 7) mixing/loading record keeping; and 8) evaluation of the overall treatment effectiveness.

These activities will be carried out by several Forest Service employees but the overall responsibility will be the Project Coordinator/Technical Specialist or a designee who will report to the Site Representative/COR. The assigned Forest Service Technical Specialists are noted in the attached flow chart.

OPERATIONAL CONSIDERATIONS

INSECTICIDE RATE, NUMBER OF APPLICATIONS AND TREATMENT AREAS

At Blackwater NWR, 896 acres will be treated with two applications of *Btk* spaced 4 to 7 days apart. The *Btk* will be sprayed undiluted at 36 BIUs per acre per application. At Piscataway Park, Gypchek will be applied at the rate of 2 x 10^{11} PIBs in a total mix of one gallon per acre per application on 100 acres. The second application should be applied 3 days after the first application.

SPRAY BLOCK SELECTION AND LOCATION

There are 13 treatment areas at Blackwater NWR and 1 treatment area at Piscataway Park (Figures 1 and 2). All of these sites are valued for wildlife habitat or recreation/aesthetics, and are infested by gypsy moth. The boundaries of each spray block will be delineated on 7.5 minute topographic quadrangle maps and or aerial photographs.

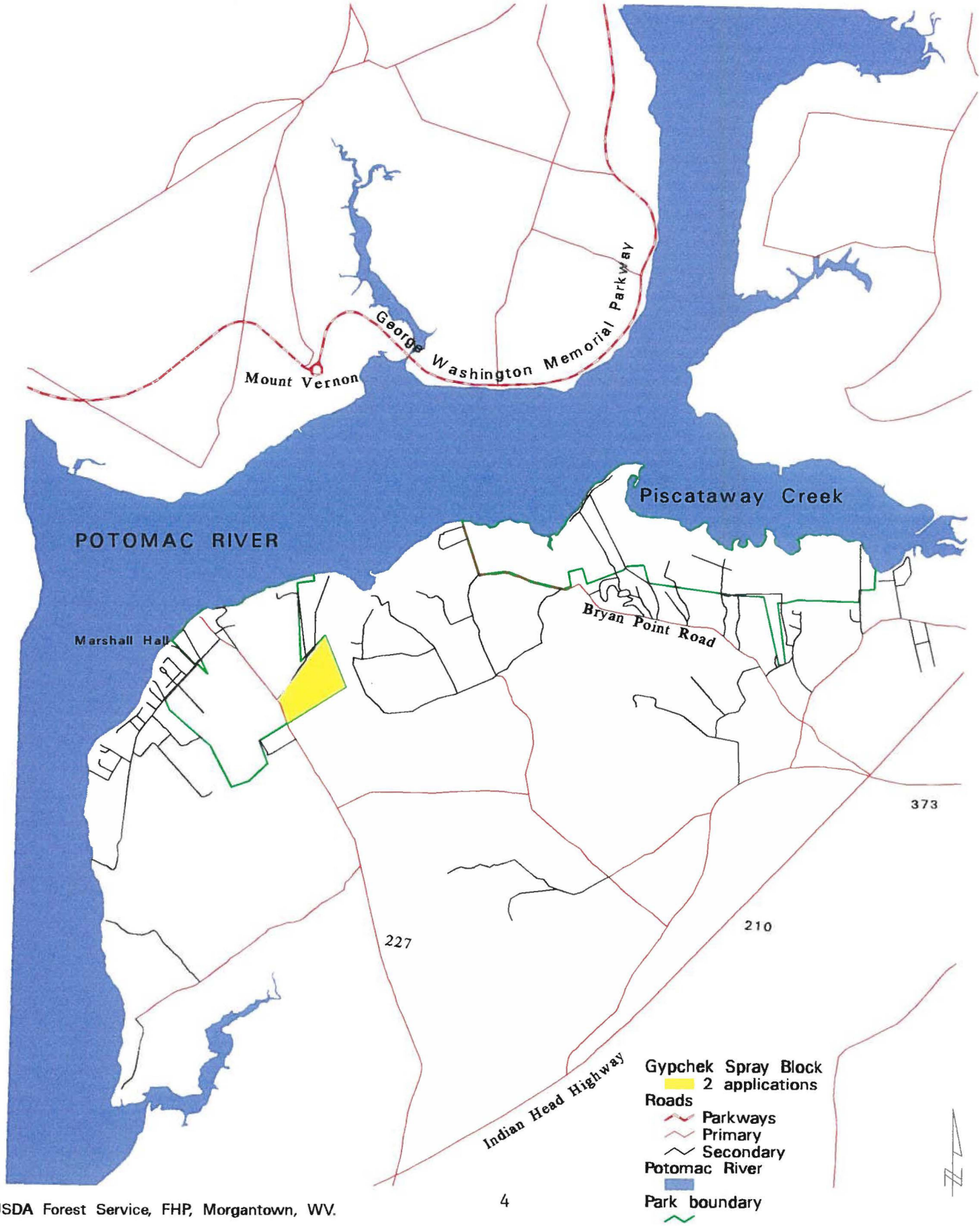
STAGING AREA

The staging area for both of the projects will be the Dorchester County Airport located near Cambridge, Maryland. This airport is approximately 8 miles north east of Blackwater NWR and 59 miles east of Piscataway Park (Figure 3).

Figure 1. -- Location of treatment areas at Blackwater National Wildlife Refuge.

B.t.k. treatment area
2 applications
Roads
Primary
Secondary
Stand Boundaries
Stands

Figure 2. -- Location of treatment area at Piscataway Park.



USDA Forest Service, FHP, Morgantown, WV.

Figure 3. -- General location map of the Dorchester County Airport, Blackwater National Wildlife Refuge and Piscataway Park.

Baltimore
Dundalk
Essex
Columbia
Annapolis
Washington
Silver Spring
Bethesda
Whaton
Cambridge
Easton
St. Charles
Golden Beach
St. Mary's City
Chesapeake Beach
Solomons
Cove Point
Lexington Park
Piscataway
Waldorf
Hughesville
Leonardtown
Colonial Beach
Oxon Cove Park
Oxon Hill Farm
Fort Washington
Fort Foote
Harmony Hall
Piscataway Park
Accokeek
Mount Vernon
Alexandria
Arlington
Fort Belvoir
Quantico
Dumfries
Manassas
Fredericksburg
Aquia Creek
Stafford
Woodbridge
Occoquan
Manassas National Battlefield Park
Prince William Forest Park
Chancellorsville
Wilderness
Spotsylvania
Fredericksburg & Spotsylvania National Military Park
Lake Anna
Orange
Culpeper
Warrenton
Gainesville
Haymarket
Leesburg
Dulles International Airport
Sterling
Reston
Herndon
Chantilly
Centreville
Bull Run
Manassas National Battlefield Park
Front Royal
Shenandoah National Park
Skyline Drive
Luray
Luray Caverns
Shenandoah River
Harpers Ferry
Harpers Ferry National Historical Park
Antietam National Battlefield
Sharpsburg
Hagerstown
Boonsboro
Frederick
Catoctin Mountain Park
Camp David
Thurmont
Gettysburg
Gettysburg National Military Park
Eisenhower National Historic Site
Emmitsburg
Taneytown
Westminster
Hampstead
Manchester
Sykesville
Eldersburg
Mount Airy
Ellicott City
Columbia
Laurel
Bowie
Upper Marlboro
Clinton
Fort Washington
Andrews AFB
Camp Springs
Suitland
Greenbelt
College Park
Beltsville
Calverton
Laurel
Savage
Jessup
Odenton
Fort Meade
Gambrills
Crownsville
Arnold
Severna Park
Pasadena
Glen Burnie
Brooklyn Park
Linthicum
Hanover
Elkridge
Ellicott City
Dorsey
Clarksville
Highland
Fulton
Scaggsville
Laurel
Patuxent River
Patuxent River Naval Air Station
Lexington Park
California
Hollywood
Leonardtown
Piney Point
St. George Island
Point Lookout
Point Lookout State Park
Scotland
Drum Point
Solomons
Cove Point
Lusby
Calvert Cliffs Nuclear Power Plant
Chesapeake Beach
North Beach
Prince Frederick
Port Republic
Huntingtown
Owings
Dunkirk
Friendship
Deale
Shady Side
Galesville
Edgewater
Mayo
Annapolis

CALIBRATION AND CHARACTERIZATION

The spray aircraft will be calibrated and characterized prior to the anticipated start date of the spraying.

SPRAY TIMING

The estimated start date for the spraying is May 3, ± 5 days. The spray window will extend approximately 14 days from the actual starting date which will depend upon larvae and foliage development within the treatment areas. The *Btk* treatment should begin when 10-25 percent of the larvae reach the second instar and foliage expansion on the oaks range from 25 to 50 percent. The Gypchek treatment should begin when the majority of the are late first instar and expansion on the oaks is at least 20 percent.

WEATHER RESTRICTIONS

Desirable weather conditions during spray operations are critical to the success of the treatment. Weather conditions will be monitored at or near the spray blocks by Forest Service personnel. Spray operations will be delayed or postponed when conditions are less than acceptable for good spray deposition.

Acceptable conditions include: no inversions; wind speeds less than 10 mph and steady; temperatures between 35 and 80°F; relative humidity greater than 40 percent for *B.t.* and 50 percent for Gypchek; and chance of rain within 24 hours of treatment is minimal.

TREATMENT MONITORING

Technical specialists from the Forest Service will be in or near the treatment areas during the time of treatment to observe and report the spray deposition. When inadequate deposition is reported to the load site, the spraying operation will be suspended until weather conditions are favorable for good deposition.

Technical specialists from the Forest Service will also view the down loaded DGPS printouts of each block. These printout will show if areas inside the treatment blocks were missed and if areas outside the treatment blocks were mistakenly sprayed. These printouts are kept as permanent records showing there areas treated.

The volume of the treatment will be monitored by keeping accurate aircraft load sheets. The actual amount of material sprayed should be within 5 percent of expected amount. The expected gallon amount for *Btk* is equal to .75 times the number of acres to be treated with *Btk* while the expected gallon amount for Gypchek is equal to the number of acres to be treated with Gypchek.

COMMUNICATIONS

Communication between the staging area and the field crews at Blackwater NWR will be conducted through portable FM radios on a predetermined ground frequency. This communication will be enhanced by a repeater located at the Church Creek fire tower. Communication between the staging area and the field crews at Piscataway Park will be conducted through cellular telephones. Communications between the field crews and the airborne spray aircraft will be conducted through AM radios on a pre-determined air to ground frequency. For safety reasons, communications should be minimal with the pilot while spraying.

PESTICIDE HANDLING AND STORAGE

The contractor is responsible for handling and transporting the *Btk* in a safe and judicious manner. Any unused *Btk* is the responsibility of the contractor. All empty containers are to be disposed of by the contractor in accordance with the manufacturer's recommendations. All precautions listed on the label should be observed. If the *Btk* is delivered in a bulk tank, the *Btk* should be recirculated once before initial usage. The

contractor will provide a MSDS for the insecticide used. The *Btk* should be stored in a cool place out of direct sunlight.

The Forest Service will provide the Gypchek and its carrier and a MSDS for the Gypchek and carrier. The Forest Service is responsible for obtaining unchlorinated water needed for the Gypchek tank mix. The Gypchek tank mix should not be pre-mixed the day before treatment.

WORKING RESTRICTIONS FOR PILOTS

The pilots for the projects will follow these guidelines:

Flight time will not exceed a total of eight hours per day.

Flight time shall not exceed a total of 42 hours in any six consecutive days.

Pilots accumulating 36 to 42 hours of flying in any six consecutive days shall be off duty the following full calendar day.

Within any 24-hour period, pilots shall have a minimum of ten hours off duty.

Duty includes flight time, ground duty of any kind, and standby or alert status at any location.

During any 14 consecutive days, pilots shall be off duty for two full calendar days. Days off duty need not be consecutive.

Pilot flight hours will count towards the cummulative flight time restrictions, regardless if the flight hours were accrued on other projects.

Please refer to the Safety Plan for further information.

RETREATMENT CONSIDERATIONS

The Site Representative/COR, after consulting with Forest Service personnel, has the option of retreating an area under the following circumstances:

Ground observations, spray cards and/or DGPS print outs reveal an unacceptable application by the contractor due to pilot error or mechanical malfunction.

More than .5 inches of rain wihtin 24 hours of treatment or the intensity of the rain within 12 hours was such that washoff was likely.

POST TREATMENT EVALUATIONS

The effectiveness of aerial application of *Btk* at Blackwater NWR and Gypchek at Piscataway Park will be evaluated using a post-suppression aerial defoliation survey and an egg mass survey. The treatments will be considered successful at a site if noticeable defoliation occurs on less than 20 percent of the treatment area and residual gypsy moth populations are reduced below the treatment threshold of 750 egg masses per acre on 80 percent of the treatment area.